Applicant : Mercier et al.
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Attorney's Docket No.:. 07575-032002 / P01-1914.02

REMARKS

Claims 23-45 are pending, of which claims 23, 31, 39, and 40 are independent. Claims 23-45 stand rejected. The applicant respectfully requests reconsideration in view of the following remarks.

Section 112 Rejections

Claims 31-38 and 40-45 stand rejected under 35 U.S.C. Section 112 as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The applicant amended the claims as the Examiner required.

Section 103 Rejections

Claim 23 stands rejected under 35 U.S.C. Section 103(a) as being unpatentable over U.S. Patent No. 5,649,152 to Ohran et al. ("Ohran"), in view of "File System Design for an NFS File Server Appliance" by Hitz et al. ("Hitz"), in further view of "LFS- A Local File System for Multiprocessor NFS Network Servers" by Schwartz et al. ("Schwartz"). The applicant respectfully traverses the rejection because claim 23 recites limitations not disclosed or suggested by Ohran, Hitz, and Schwartz. For example, claim 23 recites a storage device controller that includes "snap shot logic" and "copy logic," "the copy logic being operable in response to receiving the copy command to generate and send one or more storage device commands to one or more storage devices for the source and target volumes to copy data from the source volume directly to the target volume without having a file server in the data path, the copy logic using the snapshot map and the snapshot data to maintain coherency of the copied data."

Ohran discloses a system that includes a digital computer 102 and a mass storage device 104. *See* FIG. 1. The mass storage device 104 is a SCSI or IDE magnetic disk connected to digital computer 102 "through an appropriate controller." Col. 3, lines 63-65. Ohran further discloses a method for creating a static image of the mass storage device 104. *See* FIG. 2; *and* col. 4, line 14 through col. 6, line 40. However, there is no disclosure or suggestion in Ohran

that it is the controller, as oppose to the computer 102, that performs the method for creating a static image of the mass storage device controller 104. Indeed, Ohran states that it is a file server 312, which is an implementation of the computer 102, that performs the method shown in FIG. 2. *See* col. 6, lines 56-57; and FIG. 3. Moreover, Ohran is simply silent on the functions of its controller. Thus, Ohran does not disclose or suggest a storage device controller that includes snapshot logic and copy logic, as required by claim 23. Furthermore, as the Examiner recognizes, Ohran does not disclose or suggest a controller that includes copy logic "operable in response to receiving the copy command to generate and send one or more storage device commands to one or more storage devices for the source and target volumes to copy data from the source volume directly to the target volume without having a file server in the data path," as required by claim 23.

Hitz discloses a network appliance called FAServer™ NFS appliance. *See* page 5, second paragraph. The appliance is a file server. *See id.* The appliance uses a WAFL file system that supports RAID. *See* page 5, third paragraph. However, Hitz's appliance is not the same as the claimed storage device controller. As the Examiner recognizes, Hitz does not disclose or suggest that its appliance is a controller that includes copy logic "operable in response to receiving the copy command to generate and send one or more storage device commands to one or more storage devices for the source and target volumes to copy data from the source volume directly to the target volume without having a file server in the data path," as required by claim 23.

Schwartz discloses an NFS server called NS 5000. *See* Section 1. NS 5000 is a network file system server that includes multiprocessors. *See* Section 1.2. A key feature of the NS 5000 architecture is that its Unix file system is totally separated from the kernel and executes on its own independent file processor. *See id.* However, a file server having this feature is not the same as a controller that includes copy logic "operable in response to receiving the copy command to generate and send one or more storage device commands to one or more storage devices for the source and target volumes to copy data from the source volume directly to the target volume without having a file server in the data path." First, NS 5000 is a file server, and

data being copied would traverse through NS 5000, as suggested by FIG. 2. The copied data thus would have a file server in the data path. Furthermore, although NS 5000 provides the Unix file system with its own processor, file system performance may still be affected by data being copied because data representing file requests would share a same bus, i.e., the enhanced VME backplane, as the data is being copied, written, or read. In contrast, a file server operating in conjunction with the claimed controller would suffer no such detrimental effects because data is copied without having the file server in the data path. Thus, Schwartz does not disclose or suggest the controller claimed by claim 23.

As established above, none of Ohran, Hitz, and Schwartz discloses or suggests the claimed controller. As none of these references discloses or suggests the claimed controller, their combination, assuming that there is motivation for such a combination, also fails to disclose or suggest the claimed controller. The Examiner does not contend that the other applied references disclose or suggest the above discussed limitations of claim 23. For at least the reasons presented above, the applicant respectfully submits that claim 23 and its dependent claims are in condition for allowance.

Claim 31 stands rejected under 35 U.S.C. Section 103(a) as being unpatentable over Ohran in view of Hitz and in further view of Schwartz. The applicant respectfully traverses the rejection. Claim 31 recites a method having the storage device controller, in response to receiving the copy command, "generating and sending storage device commands to one or more storage devices of the source and target volumes to copy data directly from the source volume to the target volume, the storage device controller also using the snapshot map and snapshot data to maintain coherency of the copied data." For reasons similar to those presented above, the application respectfully submits that claim 31 and its dependent claimed are in condition for allowance.

Claim 39 stands rejected under 35 U.S.C. Section 103(a) as being unpatentable over Ohran in view of Hitz and in further view of Schwartz. The applicant respectfully traverses the rejection. Claim 39 recites a computer-implemented method that includes "copying each block of the source data object to a corresponding block in the destination data object in the absence of

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the snapshot version of the block and otherwise copying the snapshot version of the source data
object block to the corresponding block in the destination data object, wherein data is directly
transferred between the source and destination storage device controllers without traversing a
server operable to process file system requests, and wherein coherency of the data transferred
between the source and destination storage device controllers is maintained without requiring
any file system to maintain a snapshot map." For reasons similar to those presented above, the
application respectfully submits that claim 39 is in condition for allowance.

Claim 40 stands rejected under 35 U.S.C. Section 103(a) as being unpatentable over
Ohran in view of Hitz and in further view of Schwartz. The applicant respectfully traverses the
rejection. Claim 40 recites a system that includes a controller "operable, in response to receiving
the copy command, to generate and send one or more storage device commands to one or more
storage devices for the source and target volumes to copy data from the source volume directly to
the target volume without having a file server in the data path, the controller using the snapshot
map and the snapshot data to maintain coherency of the copied data." For reasons similar to
those presented above, the application respectfully submits that claim 40 and its dependent
claims are in condition for allowance.

Please apply the charge for a two-month extension of time, and any other charges or
credits, to deposit account 06-1050.

                                                    Respectfully submitted,

Date: _Sep. 23_, _2005_____   _____
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